

TAXONOMIC CHANGES IN NEARCTIC PTEROMALIDAE,  
WITH THE DESCRIPTION OF SOME NEW TAXA  
(HYMENOPTERA: CHALCIDOIDEA)

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*Abstract.*—Numerous taxonomic changes in the placement of Nearctic Pteromalidae are made, and five new species are described. New genera described include *Ficicola* Heydon (for *Ormocerus flora* Girault) and *Collentis* Heydon (for *Dipara latipennis* Ashmead); new species include *Sphegigaster grisselli* Heydon, *S. schauffi* Heydon, *Amphidocius schickae* Heydon & Bouček, *Tricyclomichus algonquinus* Heydon, and *Panstenon poaphilum* Heydon. New generic synonymies include *Apterolaelaps* Ashmead with *Dipara* Walker; *Parasyntomocera* Girault, *Stigmatocrepis* Ashmead, *Parecrizotes* Girault, and *Mesecrizotes* De Santis with *Gastrancistrus* Westwood; *Lophocomodia* Ashmead with *Psilocera* Walker; *Megatrydymus* Girault with *Acaenacis* Girault; and *Trimeromicrus* Gahan with *Zatropis* Crawford. The current taxonomic status of *Dipachystigma* Crawford, *Spalangiolaelaps* Girault, *Epipteromalus* Ashmead, and *Zatropis* Crawford is discussed. New Nearctic distribution records for *Melancistrus* Graham, *Ablaxia* Delucchi, and *Psilonotus* Walker are published. New species synonymies and combinations are published for the generic synonymies listed above as well as for *Cleonymus* Latreille, *Bairamlia* Waterston, *Macroglenes* Westwood, *Seladerma* Walker, *Sphaeripalpus* Förster, *Ablaxia* Delucchi, *Merisus* Walker, *Psilonotos* Walker, and *Tomicobia* Ashmead.

*Key Words:* Hymenoptera, Pteromalidae, Nearctic, fig, new genera and species, new synonymy, new combinations

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A study of the described species of Nearctic Pteromalidae by the authors for a key to the Nearctic genera has uncovered numerous taxonomic changes that need to be made before the key is published. Some of these, including new synonymies and corrections in the placement of genera and species of Nearctic Pteromalidae, are reviewed in the present text. In addition, five new species of Pteromalidae representing unusual species or species belonging to genera not yet recorded from the Nearctic region are described.

Terminology in this paper generally fol-

lows that of Graham (1969), except that genal concavity is used instead of genal hollow, the lower ocular line (abbreviated LOcL) is an imaginary line across the face between the most ventral point of the orbits, club is used instead of clava, the elongate raised sensilla on the antennal flagellar segments are called multiporous plate (abbreviated MPP) sensilla, the middle body tagma including the thorax and propodeum is called the mesosoma, and the gastral terga are numbered T1-7 beginning with the first tergite after the petiole. The following abbreviations are used: median ocellar di-

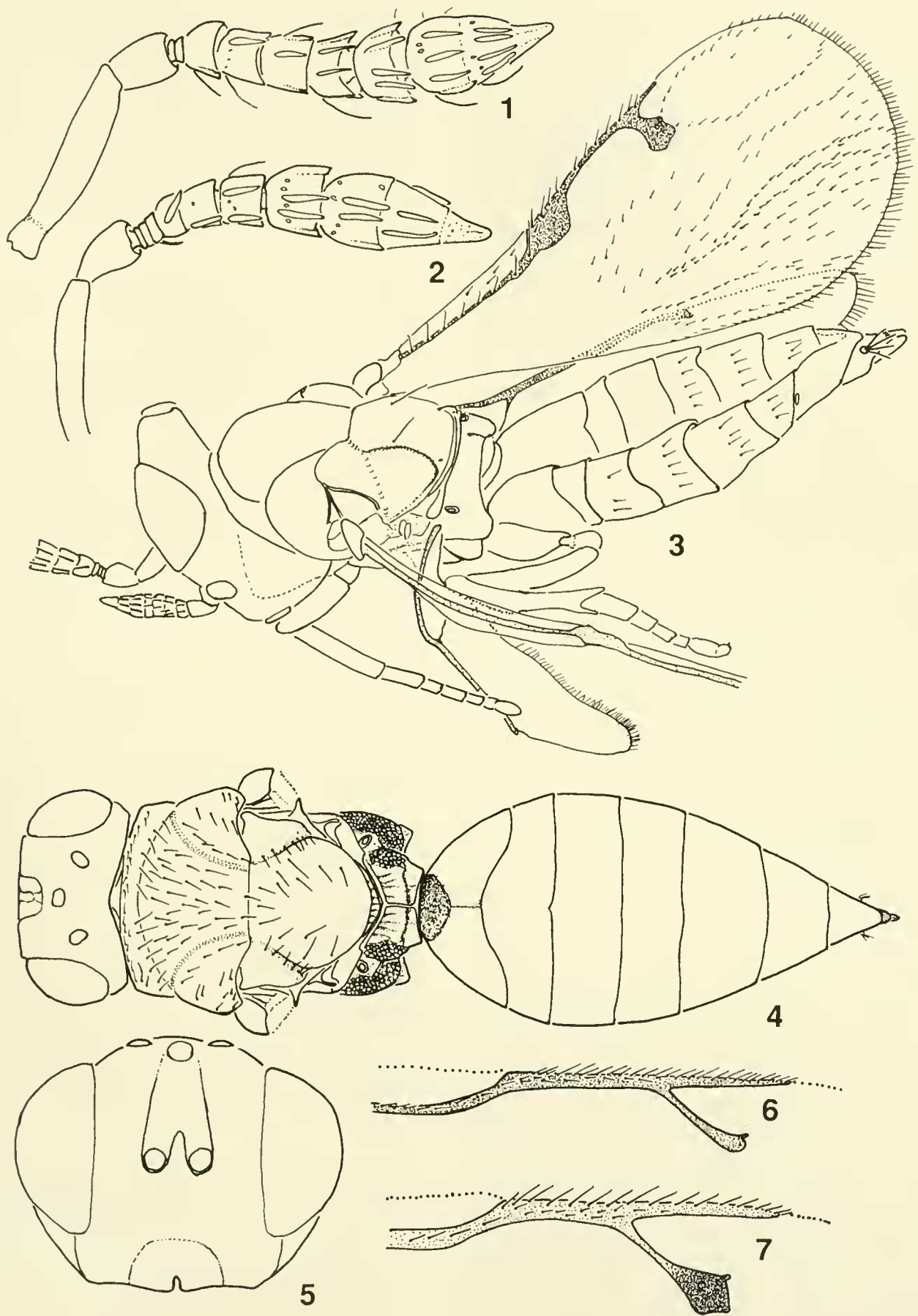
ameter is MOD, ocel-ocular distance is OOL, posterior ocellar distance is POL, lateral ocellar distance is LOL, antennal funicular segments basally to distally are F1 through F6 and the gastral terga are T1 through T7. Sculpturing is defined according to Harris (1979). The units of measurement given in the descriptions can be converted to millimeters by multiplying by 0.02.

1. *Ptinobius* Ashmead was created for *Charitopus magnificus* Ashmead, 1888 without description (Ashmead 1896). *Ptinobius* was characterized in Ashmead (1904), and separated from *Cleonymus* Latreille and *Micradelus* Walker by differences in the visibility of the labrum. This character is of no validity as the labrum is more or less exposed in all species of this group, and since the species assigned to *Ptinobius* agree otherwise with those in *Cleonymus*, *Ptinobius* was synonymized with *Cleonymus* by Bouček (1988). He examined the types of all Nearctic species but formally transferred only *P. magnificus* to *Cleonymus*. The authors now transfer the four other Nearctic *Ptinobius* species to *Cleonymus* as *C. agrili* (Rohwer) **n. comb.**, *C. amabilis* (Cockerell) **n. comb.**, *C. californicus* (Crawford) **n. comb.** and *C. texanus* (Crawford) **n. comb.**

2. *Dipachystigma* Crawford was originally placed in the Tetracampini (Crawford 1911), then moved to the Pirenini (Peck 1951), but we place it in the Colotrechninae. The type species, *D. cushmani*, has five-segmented tarsi and both of the character states defining the Colotrechninae (Grissell 1985)—the axillae project cephalad well beyond the front of the scutellum and the scutellum with a pair of lateral longitudinal grooves produced by its swollen lateral portions (Fig. 3). *Dipachystigma* will not run out in the key to the genera of the Dvalliinae (= Colotrechninae) by Hedqvist (1978) because the two known species are minute; consequently their antennal segmentation is reduced relative to other genera in the Colotrechninae. *Dipachystigma* is

phenetically close to *Elachertodomyia* Girault; both genera having furrowlike notauli, five or fewer funicular segments, and slender femora. *Dipachystigma* can be separated from *Elachertodomyia* by the enlarged basal area of the marginal vein and by the spinelike terminal club segment.

*Dipachystigma* was described for *D. cushmani* Crawford, 1911 (Fig. 3); *D. secundum* Girault, 1917 was described shortly thereafter. These species are very similar except for differences in size and in the antennal segmentation. The type of *D. secundum*, with a wing length of 0.56 mm, is much larger than any specimens of the type series of *D. cushmani*. The six specimens of the type series of *D. cushmani* have wing lengths between 0.36 and 0.42 mm ( $\bar{x}$  = 0.38 mm). The funiculus of the type of *D. secundum* has two minute annelliform segments visible only in microscopic preparations, five quadrate funicular segments, and a three-segmented club (Fig. 1). The funiculus of the type of *D. cushmani* has two minute annelliform segments, one very short transverse almost annelliform funicular segment, four terete funicular segments each wider and longer than the one preceding, and a three segment club (Fig. 2). Two of the five paratypes of *D. cushmani* still retaining their antennae have the second funicular segment transverse also, so that only three funicular segments are quadrate and have MPP sensilla. A series of five females in the collection at Texas A&M that were collected on the same day from Benston-Rio Grande State Park, Texas, have four funicular segments with MPP sensilla except the smallest specimen, which has only three. The variation in the number of funicular segments with MPP sensilla may be attributed to the size of the individual—large individuals may have four or five such segments, smaller individuals three. However, until a series is found which contains individuals with both four and five segments with MPP sensilla, we prefer to keep *D. cushmani* and *D. secundum* separate.



Figs. 1-7. 1, *Dipachystigma secundum*, female, antenna. 2-3, *D. cushmani*, female. 2, antenna; 3, habitus. 4-7, *Ficicola flora*. 4, female, body (dorsal view); 5, female, head (anterior view); 6, female, fore wing venation; 7, male, fore wing venation.

3. Examination of many specimens of Diparinae, especially in the CNC (Ottawa) and the USNM (Washington, D.C.), led us to affirm that *Apterolelaps* Ashmead, 1904 is a junior synonym of *Dipara* Walker, 1833 (as *Tricoryphus* Förster, 1856) as first proposed by Delucchi (1959). Subsequent revisions of the Diparinae by Hedqvist (1969) and Yoshimoto (1977) maintained *Apterolaelaps* as a valid genus. These latter researchers based their conclusions on the fact that the annellus is almost fused with the first funicular segment in the single type specimen of the type species, *A. nigriceps* Ashmead. However, in all other characters this specimen agrees with the species characterized by Yoshimoto as *Dipara pedunculata* (pp. 1040–1042, and figs. 2A–D, 26). Yoshimoto further confused the matter by designating a holotype female for *D. pedunculata* that disagrees with his own description, and is in fact a specimen of *D. canadensis* Hedqvist. The synonymy of the two described Nearctic species of *Dipara* should be as follows:

*Dipara nigriceps* (Ashmead) **n. comb.**

*Apterolelaps nigriceps* Ashmead, 1904: 279.

*Apterolaelaps nigriscutum* Girault, 1916: 264.

*Dipara canadensis* Hedqvist

*Dipara canadensis* Hedqvist, 1969: 193.

*Dipara pedunculata* Yoshimoto, 1977: 1040–1042, **n. syn.**

4. Ashmead (1904) regarded the Lelapinae and Diparinae as separate subfamilies in the Miscogasteridae and Pteromalidae respectively, so separated mainly because of the presence or absence of a median tooth on the clypeus. After Lelapinae was placed in synonymy under Diparinae by Bouček (1954: 54), Delucchi (1962: 380) retained the two former groups as two different tribes of the Diparinae. Later Hedqvist (1969) apparently followed Delucchi in regarding the two tribes as valid subdivisions of the Diparinae, but did not refer to Delucchi's paper. From his key, however, it is possible

to assume that he disregarded the clypeal character used by Ashmead, and placed the genera with brachypterous females in the Diparini; *Laelaps* Haliday, with fully winged females, was placed in the Lelapini. Yoshimoto (1977), following Hedqvist (1969), also used this subdivision, again in a vague way, without knowing about Delucchi's proposal.

We do not see any reason why the Diparinae of America should be divided into three tribes (the Diparini, Lelapini, and Neotomocerini) as proposed by Hedqvist (1971). We feel they should be regarded as synonyms as treated by Bouček (1988) since intermediates between these "tribes" are known. Although morphologically very close to *Lelaps* Haliday, both Hedqvist (1969) and Yoshimoto (1977) placed *Spalangiolaelaps* Girault, 1916 in the Diparini because only the brachypterous females of its type species, *S. argenticoxa* Girault, are known, and did not compare it with *Lelaps* (of the Lelapini) whose species, described or undescribed, are fully winged. *Spalangiolaelaps* Girault is maintained herein as a valid genus, but when the male of *S. argenticoxa* is known, *Spalangiolaelaps* may prove to be a *Lelaps* species with brachypterous females.

5. Palearctic *Gastrancistrus* Westwood species are known to belong to several species groups, but the genus exhibits such a variety of form in the Nearctic region that a precise definition of the genus is difficult. Certain species are so divergent from the basic morphology that they were given generic names. The authors believe *Gastrancistrus* should be treated rather broadly to prevent its fragmentation into biologically or cladistically meaningless units. After examination of the appropriate types by the authors, the following genera are newly synonymized with *Gastrancistrus* Westwood: *Parasyntomocera* Girault, 1917, **n. syn.**; *Stigmatocrepis* Ashmead, 1904, **n. syn.**; *Parecrizotes* Girault, 1916, **n. syn.**; and *Mesecrizotes* De Santis, 1968, **n. syn.**

6. The genus *Bairamlia* Waterston should

be deleted from the North American catalog (Burks 1979) because that record is based on the misidentification of *Pirene marylandensis* Girault by Gahan (in Waterston 1929). Our examination of the holotype of *P. marylandensis* revealed that the species belongs in *Gastrancistrus*, and should be known as *G. marylandensis* (Girault), **n. comb.**

7. The generic name *Pirene* Haliday, 1833 was replaced by *Macroglenes* Westwood, 1832 by Bouček (1988) and the two species under the genus in Burks (1979) are now regarded as *Macroglenes*. This includes *P. penetrans* as *M. penetrans* (Kirby), **comb. revocata**, and the species *P. marylandica*, as *M. marylandicus* (Girault), **n. comb.**, despite a remark by Burks that "placement of this sp. in *Pirene* may be erroneous." We have examined the holotype fragment on a slide and have no doubt that the species belongs to *Macroglenes*.

8. *Systasis diplosidis* Eckel was described in 1903. In 1969 Graham described a new genus, *Melancistrus*, for species similar to *Systasis* but with a more hirsute callus, the propodeum with a distinct median carina usually crossed by a transverse elevation or crest, the hind coxa more crested and hirsute, and the female gaster with the hypopygium longer and with a terminal membranous projection (mucro). *Systasis diplosidis* fits the definition of *Melancistrus*, and so is transferred to *Melancistrus* as *M. diplosidis* (Eckel), **n. comb.** This is the first record of *Melancistrus* from the Nearctic region.

9. *Ormocerus flora* Girault, 1920 is not an *Ormocerus* species. We place it, as the type species, in a new genus, *Ficicola* Heydon, that is characterized as follows:

***Ficicola* Heydon, NEW GENUS**

Figs. 4-7

Type species.—*Ormocerus flora* Girault, 1920.

*Female*: Body copper-colored; head and dorsum of mesosoma with distinct white setae. Head, dorsum of mesosoma finely

punctate. Head having clypeus with anterior margin more or less produced, deeply emarginate mesally (Fig. 5); gena convex; toruli located well above LOcL, separated by dorsally projecting spur (Figs. 4, 5); antennal scrobes deep; occiput immarginate. Antenna with 2 annelli, 6 funicular segments; club 3-segmented, without apical spicula or ventral patch of micropilosity. Mesosoma with short horizontal pronotal collar, its anterior edge abrupt but acarinate; notauli extending to hind margin of pronotum as narrow and shallow groove (Fig. 4); scutellum broadly abutting mesoscutum; upper epimeron with a pair of pits, smooth only along anterior margin; dorsellum cariniform; propodeum with complete median carina, with straight costula meeting median carina at right angles; plicae as wide as spiracles and minutely alveolate dorsally, callus finely alveolate and moderately setose, nucha short and smooth crescent. Gaster sessile; terga inflated even in air-dried specimens; hind margin of T1 concave mesally, with median longitudinal line of weakness so in some lights the tergum appears divided in two (Fig. 4); succeeding terga unremarkable. Fore wing with costal cell bare over mesal  $\frac{1}{3}$ ; basal cell and basal vein bare; speculum well developed, open posteriorly; marginal vein slender, longer than postmarginal vein; stigmal vein shorter than postmarginal vein; stigma not noticeably enlarged, concolorous with stigmal vein (Fig. 6). Legs, especially fore and hind femora enlarged; hind coxa without dorsobasal setae; hind tibia with one apical spur.

Males similar to females except: Body color yellowish green except gaster brown with basal circular yellow patch. Antenna with one row of MPP sensilla on each funicular segment, with short semierect setae. Fore wing with marginal vein somewhat thickened; stigma enlarged, much darker than remainder of venation (Fig. 7).

*Ficicola flora* is known from the holotype female, paratype male and female and an additional 2 males all reared from fig, 16 May 1887 at Coconut Grove, Florida (Unit-

ed States) (all USNM). An additional 16 specimens were collected from the following Florida localities (all USNM): Biscayne, 2 ♀; Cutler, 10.II.1909 (on *Ficus aurea*), 2 ♀; Miami, V.1989 (ex *Ficus aurea* fruit galls), 7 ♀, 5 ♂.

Etymology.—The genus name is derived from *Ficus*, the generic name of figs, and the suffix *-cola*, meaning resident. The gender is masculine.

10. *Terobia vulgaris* Ashmead, 1902 was described from St. Paul Island, Alaska from "many specimens." A total of 42 specimens of what must be the type series are housed under this name in the USNM collection. These must be regarded as syntypes since their data labels record them from the type locality, they all have identical type labels, and both the original description and the Smithsonian type log book record there being many type specimens. These syntypes include at least four different species, but only two of these species are represented by unbroken specimens of both sexes. Ashmead's description is contradictory at times, and neither of these species agrees perfectly with his description. A lectotype female has been chosen from the series most likely to be unambiguously distinguishable, labelled, and is deposited in the USNM collection. *Terobia vulgaris* was moved to *Ormocerus* Walker by Burks (1979) after *Terobia* was synonymized with *Ormocerus* by Delucchi (1955). The lectotype of *T. vulgaris* (as well as the other three "species" in the type series) belongs in *Seladerma* Walker, so *Terobia vulgaris* Ashmead is herein transferred to *Seladerma* as *S. vulgaris* (Ashmead), **n. comb.**

11. Burks (1979) lists eight Nearctic species of *Miscogaster* Walker. *Miscogaster aurata* (Ashmead), 1896 is herein transferred to *Sphaeripalpus* Förster as *S. auratus* (Ashmead) **n. comb.** *Miscogaster abnormicolor* Girault, 1917; *M. biguttata* Girault, 1917; *M. discoloripes* Girault, 1917; *M. flora* Girault, 1917; *M. keatsi* Girault, 1917; *M. marylandica* Girault, 1916; and *M. unguetta*

Girault, 1916 are all transferred to *Gastrancistrus* Westwood as *G. abnormicolor* (Girault) **n. comb.**, *G. biguttatus* (Girault) **n. comb.**, *G. discoloripes* (Girault) **n. comb.**, *G. flora* (Girault) **n. comb.**, *G. keatsi* (Girault) **n. comb.**, *G. marylandicus* (Girault) **n. comb.** and *G. unguetta* (Girault) **n. comb.** True undescribed *Miscogaster* species do occur in North America (authors' unpublished information). Furthermore, the European *M. hortensis* Walker and *M. maculata* Walker were introduced to control the Alfalfa blotch leafminer, *Agromyza frontella* (Rondani), and may be established since *M. hortensis* was recovered a year after release (Hendrickson and Barth 1979).

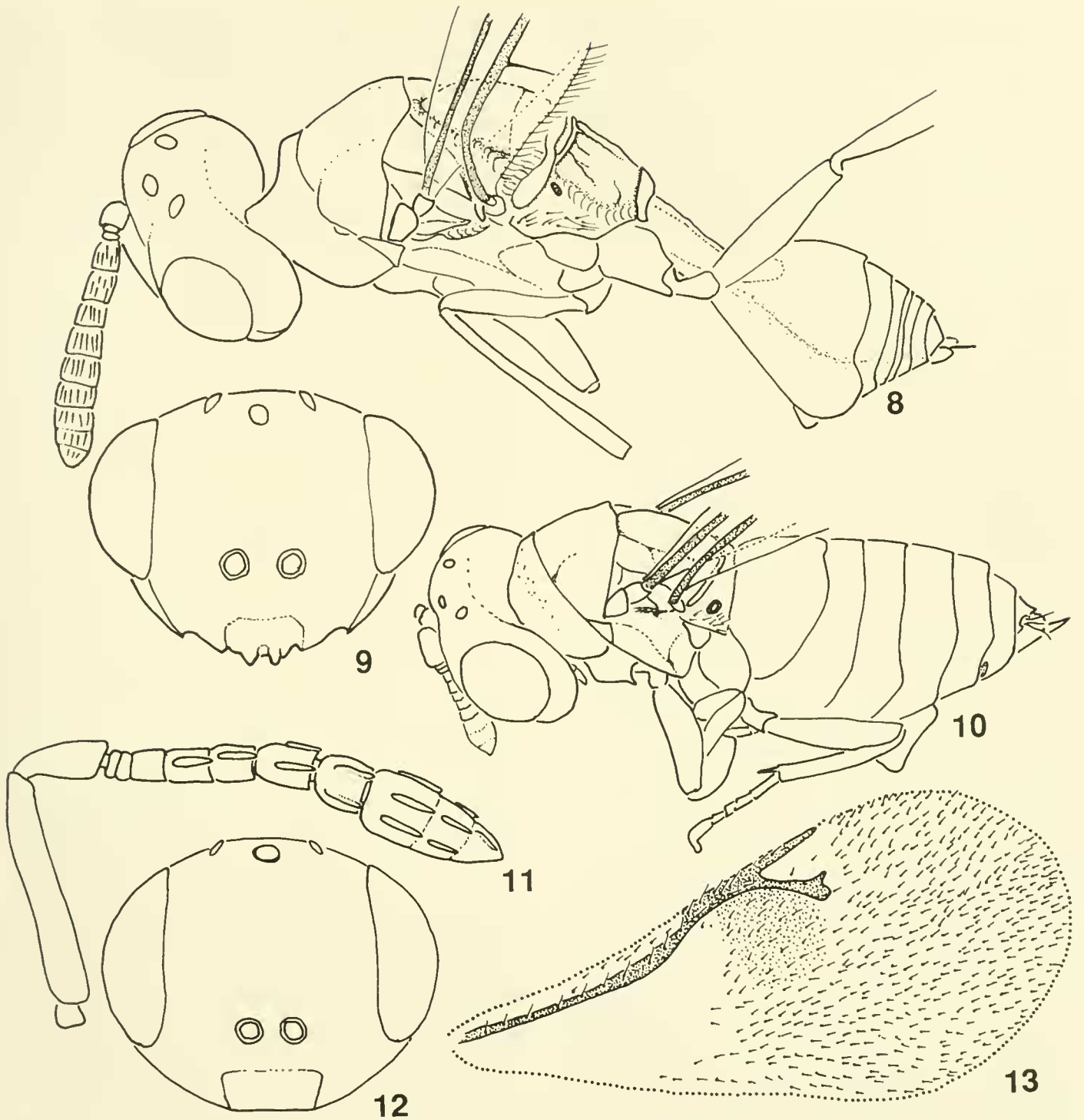
12. *Dipara latipennis* Ashmead, 1890 was transferred to *Callimerismus* Graham by Hedqvist (1969). The reasons why *D. latipennis* is not a species of *Callimerismus* are outlined in Heydon (1989). The following new genus is described for this species.

#### *Collentis* Heydon, NEW GENUS

Figs. 8–9

Type species.—*Dipara latipennis* Ashmead, 1890.

Body dark green metallic. Clypeus with three asymmetrically arranged apical denticles (the left two teeth more or less fused but the separation still indicated by a distinct groove) (Fig. 9); with shallow genal hollows extending  $\frac{1}{3}$  malar distance; toruli  $1 \times$  own diameter above LOcL; vertex with weak crest behind posterior ocelli. Antenna with two annelli and six funicular segments; club with small patch of MPP sensilla on apical club segment, without terminal spicula. Mesosoma with pronotal collar smooth over posterior  $\frac{1}{2}$ , rounded anteriorly; notauli very shallow, traceable to hind margin of mesoscutum as strip of distinct sculpture; scutellum highly convex (Fig. 8), longer than wide, without anterior median groove; frenal sulcus distinct, frenum alveolate; prepectus alveolate, without carina delimiting dorsoposterior corner; upper epimeron al-



Figs. 8-13. 8-9, *Collentis latipennis*, female. 8, habitus; 9, head (anterior view). 10-13, *Amphidocius schickae*, female. 10, habitus; 11, antenna; 12, head (anterior view); 13, fore wing.

veolate ventrally; propodeum alveolate with some weak rugae, extending posteriorly between hind coxae, median carina not well developed, plicae weakly developed but smoothly and regularly converging posteriorly, nucha smooth raised crescent. Petiole elongate, tapering anteriorly and lacking anterior ventral basal flange, with pairs of anteriorly directed setae extending halfway down its length. Gaster shortly ovate; T1

extending  $\frac{1}{2}$  gastral length, hind margin sinuous laterally and weakly convex mesally (Fig. 8). Fore wing with postmarginal vein longer than marginal vein; stigma hardly wider than stigmal vein; speculum present and not bordered by setae posteriorly; basal vein unpigmented. Hind wing lacking any setae basad of basal cross vein. Legs with two spurs on hind tibia.

Males similar but also with maxillary

palps not enlarged; all funicular segments elongate; scape with convex shiny brown smooth boss.

*Collentis* belongs in the Miscogasterini, and is similar to *Rhynocoelia* Graham but has a reticulate, elongate petiole; *Rhynocoelia* has a smooth, transverse petiole. *Collentis* is also similar to *Miscogaster* but lacks a darkly pigmented basal vein, enlarged stigma, setae basad of basal cross vein in hind wing, and a median emargination in T1. *Collentis* also has the body sculpture alveolate not coriaceous as in *Miscogaster* species.

Etymology.—The generic name, from the Latin words *collis*, meaning hill or high ground, and *entis*, meaning being, refers to the montane places where *C. latipennis* exists. The gender of *Collentis* is feminine.

Material examined.—The holotype male was collected at West Cliff, Colorado (USNM Type No. 41231, examined). An additional female and male seen were collected as follows (USNM): United States. Colorado: Chambers Lake, Larimer Co., 18.VII.1895, 1 ♂; Rist Canyon, Teller Co., 6.V.1895, 1 ♀.

Biology.—The host(s) of *Collentis* species are unknown, but are likely to be leaf or stem mining Diptera as are other related genera.

13. The genus *Lophocomodia* was established by Ashmead (1888), who based it on the single species *L. americana* Ashmead, 1888. The original type material is lost, but it seems to us that the description clearly suggests that it was based on a male of *Psilocera* (also G. E. Wallace, pers. comm.). Hence, *Lophocomodia* becomes a new junior synonym of *Psilocera* Walker, 1833 and the species should be known as *P. americana* (Ashmead) n. comb. The species may be recognizable from the description when *Psilocera* is revised for North America.

14. Girault based the description of the genotype of *Acaenacis* Girault, 1917 on a comparison with that of *Megatrydymus* Girault, 1917. He cited three differences be-

tween the two genera: *Megatrydymus* had complete notauli, spatulate body setae, and a more slender gaster; *Acaenacis* had incomplete notauli, its body setae slender, and a broader gaster (Girault 1917). However, *Megatrydymus* has incomplete notauli; although the notauli in *Megatrydymus*, as indicated by a strip of distinctive sculpture, do extend further posteriorly than in most other Pteromalinae, they do not extend to the scutoscuteellar sulcus as a furrow, groove, or line of punctures. The other two differences, while accurate, we feel are of no more than specific value. Since *Acaenacis* and *Megatrydymus* share a similar distinct gestalt and similar biologies (as parasitoids of cynipids), the authors synonymize *Megatrydymus* Girault (n. syn.) with *Acaenacis* Girault. The two species of *Megatrydymus*, *M. agrili* (Rohwer), 1919 and *M. tacti* Girault, 1917, thus become *Acaenacis agrili* (Rohwer) n. comb. and *A. tacti* (Girault) n. comb.

*Acaenacis* can be briefly characterized as follows: Head with clypeus rectangular, as high or higher than wide, its anterior margin nearly straight, anterior tentorial pits deep; toruli high on head ( $\frac{1}{2}$  way up LOcL). Antenna 13-segmented, with 3 annelli and five funicular segments; scape extending well above vertex; all funicular segments elongate, with more than one row of MPP sensilla. Mesosoma with pronotal collar rounded anteriorly; notauli sometimes indicated far posteriorly by band of distinctive sculpturing; propodeum short in females (median length  $\frac{1}{3}$  or less scutellar length), longer in males (median length around  $\frac{1}{2}$  scutellar length), plicae indicated by convex folds; nucha a transverse smooth strip along hind margin of propodeum. Legs with hind coxa crested, bare dorsally; hind tibia with two apical spurs. Fore wings with postmarginal vein only about as long as stigmal vein; stigma greatly enlarged. Gaster with hind margin of T1 often sinuous sublaterally but roundly produced medially. *Acaenacis* is represented by three described Nearctic spe-



cies and by other undescribed species in Central and South America.

15. Burks (1979) lists two Nearctic species of *Caenacis* Förster. *Caenacis asinus* Girault has the sharply carinate collar, the elongate reticulate propodeum with low straight transverse costula, and other characteristics of *Ablaxia* Delucchi. *Caenacis asinus* Girault, 1917 is herein transferred to *Ablaxia* Delucchi as *A. asinus* (Girault) **n. comb.** This is the first Nearctic record of *Ablaxia*.

*Semiotellus cupraeus* (Provancher), 1881 was transferred to *Caenacis* by Burks (1964). The type was not seen by the authors, but the brief description in Burks (1964) suggests that it may be an *Ablaxia* as well, possibly the same species as *A. asinus*.

16. *Epipteromalus* Ashmead was described for the species *E. algonquinensis* Ashmead (Ashmead 1904), but was subsequently synonymized with *Trichomalus* Thomson by Kurdjumov (1913). This synonymy was missed by "Zoological Record" and apparently by almost all Nearctic chalcidoid researchers since *Epipteromalus* appears without mention of its synonymy in Peck (1963) and Burks (1979) (but see *Epipteromalus* in Gahan and Fagan 1923). The authors believe *Epipteromalus* is a valid genus of Pteromalinae (*sensu* Graham 1969). It can be briefly characterized as follows: Species with body color dark, only weakly metallic. Head usually rather large; clypeus with anterior margin weakly truncate or weakly concave; lateral mouth margin emarginate but gena without well developed concavity above mandible; face with striae extending from clypeus to toruli or beyond; occiput immarginate. Antenna with 2 anelli and six funicular segments, these latter short and sometimes strongly transverse. Mesosoma compact; pronotal collar at most weakly margined; scutellum strongly convex, narrowed anteriorly, axillar grooves very broad and deep; upper mesepimeron smooth. Fore wing with postmarginal vein about as long as marginal vein, much longer

than stigmal vein. Gaster of female ovate, blunt apically. In addition to the unusual facial striae and the convex, narrow scutellum, *Epipteromalus* species lack the dorsal hairs on the hind coxa characteristic of *Trichomalus* species. *Epipteromalus algonquinensis* Ashmead, 1904 is the only described Nearctic species, but there are at least four undescribed Nearctic species of the genus.

17. *Eulonchetron* Graham, 1956 was missed in the North American catalog (Burks 1979), although Graham (1969: 600) listed specimens of *E. scalprum* (Askew) from Manitoba, Canada. The valid name and synonymy of the species, as examination of the relevant types revealed, is as follows:

*Eulonchetron giraulti* (Peck) Bouček, 1991: 202.

*Habrocytus canadensis* Girault, 1917: 178, 181, 182 (preoccupied by Ashmead, 1887).

*Habrocytus giraulti* Peck, 1951: 562 (n. n. for *canadensis* Girault, 1917).

*Lonchetron scalprum* Askew, 1962: 1-3.  
*Eulonchetron scalprum* (Askew) Graham, 1966: 261.

*Lonchetron giraulti* (Peck) Burks, 1979: 814.

18. *Merisus harmolitae* Gahan, 1928 was moved to *Homoporus* Thomson by Burks (1979). Herein, *M. harmolitae* is restored to its original status as a species of *Merisus* Walker. *Merisus harmolitae* females have the convex gaster and elongate 4th and 5th gastral terga characteristic of female *Merisus*; males have the flagellum distinctly paler ventrally, and the funicular segments with numerous MPP sensilla and short setae as do other male *Merisus*. Female *Homoporus* have the dorsum of the gaster collapsed in air-dried specimens and the 4th and 5th gastral terga not so long (generally shorter than tergum 3); males have the flagellum of a nearly uniform color, and the funicular segments with only one or two sparse rows of MPP sensilla and usually with long, semi-erect setae.

Nonetheless, there is some difficulty with the generic placement of *M. harmolitae* since it lacks one of the primary characteristics by which *Merisus*, *Homoporus*, and related genera are recognized—the apical spicula on the female club. However, *M. harmolitae* does have another of the unique characteristics of this group—the uniformly reticulate, featureless propodeum. Some *Chlorocythus* species are phenetically similar to *M. harmolitae* and lack an apical spicula on the club, a distinct median carina, and plicae. But *Chlorocythus* species usually have a more or less carinate pronotal collar, nearly always have deep basal foveae that are margined medially and/or laterally by fine carinae, and the female gaster collapses in air-dried specimens. *Merisus harmolitae* lacks these latter features, so it is thought best to retain *M. harmolitae* in *Merisus*, though its status may need review once the generic limits of *Homoporus*, *Merisus*, and *Chlorocythus* are better understood.

19. Burks (1979) transferred *Eutelus betulae* Girault, 1917 to *Mesopolobus* Westwood. From the type material, it is obvious that the species belongs to *Psilonotus* Walker, as suggested by Graham (1969). Hence the species should be known as (*Psilonotus betulae* Girault), **n. comb.** A lectotype female was selected by the authors, labelled, and placed in the type collection of the USNM.

20. *Karpinskiella* Bouček was recently synonymized with *Tomicobia* Ashmead (Bouček 1991). *Karpinskiella paratomicrobia* Hagen and Caltagirone, 1968 is herein transferred to *Tomicobia* as *T. paratomicrobia* (Hagen and Caltagirone) **n. comb.**

21. *Zatropis* Crawford, 1908 is one of the most species-rich genera of Nearctic Pteromalidae. *Zatropis* species can be recognized as follows: Body color generally very dark, but often with flattened white setae. Head with clypeus truncate, usually weakly concave mesally; gena sometimes flattened but usually not concave (weakly so in *Z.*

*albiclava*); toruli located just above to well above LOcL; occiput immarginate. Antenna with three annelli and five funicular segments; female club lacking apical spicula or large ventral patch of MPP sensilla. Pronotal collar crested anteriorly but acarinate; propodeum relatively short, with plicae usually strongly developed, median carina usually well developed and broadening into relatively large triangular nucha, this nucha convex but flattened posteriorly dorsally and usually alveolately sculptured. Fore wing with postmarginal vein longer than stigmal vein; dorsally with speculum extending to stigmal vein along anterior margin of wing; ventrally usually with only one (rarely with more than one) row of well developed admarginal setae. Gaster of females ovate acuminate.

Despite its species sharing a similar gestalt, there are few autapomorphic characters defining *Zatropis* as a whole. The three most distinctive characteristics of *Zatropis* species are: 1. A distinct ventral row of admarginal setae on the fore wing (a similar distinct ventral row of admarginal setae is also found in *Callitula* Spinola, *Systasis* Walker, and *Eurydinoteloides* Girault). 2. Many *Zatropis* species have distinct flattened white setae on the head and mesosoma (similar setae are found in a few other pteromaline genera such as *Acaenacis*). 3. *Zatropis* species have the propodeum relatively short, the median carina usually well developed, and the nucha convex but flattened dorsoposteriorly. More study is needed on the relationship between *Zatropis* and other similar Pteromalinae genera such as *Mesopolobus* Westwood and *Eurydinoteloides* and many similar forms found in the Neotropics, but a few preliminary synonymies can be made.

*Trimeromicrus* Gahan, 1914, **n. syn.**, with its only included species, *T. maculatus* Gahan, 1914 is herein synonymized under *Zatropis*, with the species now known as *Z. maculatus* (Gahan) **n. comb.** Females of this

common species are unique among other *Zatropis* species in having metallic blue-green patches on the otherwise dark dorsum of the mesosoma: two pairs along the anterior margin of the mesoscutum, one on the anterior corner of each axilla, and one anteriomedially on the scutellum.

*Mesopolobus justicia* (Girault), 1917 is herein transferred to *Zatropis*, as *Z. justicia* (Girault) **n. comb.**, on the basis of its possession of a well developed row of admarginal setae and the small, but convex nucha which lacks an anterior transverse carina. *Mesopolobus* species lack admarginal setae on the fore wing and their nucha is a smooth crescent demarcated anteriorly by a more or less well developed carina.

#### NEW TAXA

Descriptions follow of two unusual *Sphex* Spinola species with flattened bodies, and species representing new Nearctic records for *Amphidocius* Dzhanokmen, *Tricyclomischus* Graham and the first true Nearctic species of *Panstenon* Walker.

#### *Amphidocius schickae* Heydon & Bouček,

##### NEW SPECIES

Figs. 10–13

Holotype, female.—*Color*: Head and mesosoma dark green except pleural region and scutellum anterior to frenal sulcus which are purplish black, propodeum green; gaster purplish black except T1 and anteriolateral corners of succeeding terga green. Antenna yellow-brown with basal 1/2 of pedicel, annelli, and club slightly darker. Legs with coxae and femora bluish black; remainder yellow-brown but hind femur slightly darker in basal 1/2. Fore wing with veins pale brown, membrane with brown macula extending from marginal and stigmal vein to middle of wing (Fig. 13).

*Sculpture*: Body sculpture very weak, especially propodeum; reticulations of scutellum much smaller than those of mesoscutum; upper epimeron smooth.

*Structure*: Body length 1.0 mm. Head

ovate in anterior view (Fig. 12), width  $1.4 \times$  height (23:17),  $2.2 \times$  length (23.0:10.5); clypeus with anterior margin nearly straight (Fig. 12); eye height  $1.2 \times$  length (11:9),  $2.0 \times$  malar distance (11.0:5.5), length  $9.0 \times$  temple length (9:1); torulus located just above LOcL; ratio of MOD, OOL, POL, LOL as 1.5:2.0:7.0:3.5. Antenna (Fig. 11) with length of pedicel plus flagellum  $0.78 \times$  head width (18:23); relative lengths of scape, pedicel, annelli 1 & 2, annellus 3, F1–4, club as 9.0:3.5:0.5:1.0:1.5:1.5:2.0:1.0:6.0; relative widths of F1, F4, club as 1.0, 2.0, 3.0; F1–2 appearing elongate, F3–4 appearing about as long as wide; MPP sensilla sparse, only 1–2 visible per side, setalike; no visible micropilosity on club. Mesosoma length  $1.3 \times$  width (23:18); collar quite short, with anterior edge crested; frenal sulcus distinct; dorsellum short,  $< \frac{1}{2}$  frenal length; propodeum nearly featureless (Fig. 10), plicae completely effaced medially; petiolar foramen carinate with carinae converging medially and extending forward as sharp median carina. Fore wing (Fig. 13) length  $2.8 \times$  width (66.0:23.5); apical wing fringe absent; relative lengths of submarginal, marginal, postmarginal, stigmal veins as 28:6:5:6; costal cell with single ventral setal row in apical  $\frac{2}{5}$ ; basal vein and cell bare; speculum open posteriorly. Gaster ovate, blunt apically, length  $1.1 \times$  width (25:22); hind margin of T1 with weak median emargination; hypopygium extending  $\frac{2}{3}$  gaster length.

Allotype, male.—Similar to holotype except generally paler, predominant color on head and dorsum of mesosoma green, scape and legs pale yellow, T2 yellow-brown, macula on wing more yellow and diffuse (covering entire center of wing). Body length 0.96 mm. Antenna with length of pedicel plus flagellum  $0.91 \times$  head width (20:22); relative lengths of scape, pedicel, annelli 1 & 2, annellus 3, F1–4; club as 9.0:3.5:1.0:1.0:2.0:2.0:2.0:2.0:6.5; relative widths of F1, F4, club as 1.0, 1.5, 2.5; F1–4 appearing elongate; MPP sensilla sparse, 2–3 visible

per face, setalike; funicular setae reclinate. Gaster ovate, length  $1.2 \times$  width (23.0:19.5).

Variation.—Specimens examined display little morphological variation and generally closely resemble the holotype and allotype.

Type material.—The holotype (UCD), allotype (UCD) and 3 female and 7 male paratypes emerged in the laboratory around 22 August 1990 from leaf galls of *Neuroterus saltatorius* collected from *Quercus douglassi* in the Stebbins Cold Canyon Reserve, 11 km w. Winters, California (United States) by S. L. Heydon. An additional 105 paratypes were collected as follows (BMNH, CNC, UCD, USNM): Canada. British Columbia: Victoria, 16.VIII.1990 (ex *Neuroterus saltatorius*), 76 ♀, 44 ♂. United States. California: Clearlake Oaks, ex *Neuroterus saltatorius* galls, 1 ♀, 14 ♂; Caswell State Park (Ripon), 15.VIII.1980, ex *Neuroterus ?saltatorius*, 2 ♀, 6 ♂; Roseville, em. IX.1967, ex *N. saltatorius* asexual generation on *Q. lobata*, 7 ♀, 5 ♂; Sacramento, 24.VIII.1961, gall *Neuroterus saltatorius*, 1 ♂; Stebbins Cold Canyon Reserve, 13–24.IX.1990 (Malaise trap), 2 ♀, 18.VIII.1990, 9 ♀, 2 ♂.

Etymology.—It is our pleasure to name this species in honor of a friend of the senior author, Kathy Schick, who introduced him to the complexity and fascination of the cynipid and parasitoid faunas of California oaks.

Biology.—*Amphidocius schickae* is one of a number of parasitoids that can be reared from the mustard seed-sized leaf galls of the summer agamic generation of the cynipid *Neuroterus saltatorius* H. Edwards. Since at least one other pteromalid species as well as eulophids and eupelmids can also be reared from these galls, the exact trophic relationship of *A. schickae* to the other species living in these galls needs clarification. It is interesting to note that the galls of *N. saltatorius* occur in great numbers on both the blue oak and the valley oak which are two of the most common trees in California. Nearly every one of these galls is parasitized and *A. schickae* is one of the most common

parasitoids. It is therefore likely that *A. schickae* is one of the most common species of Pteromalidae in California and it is surprising that it has remained undiscovered until now.

*Sphegigaster grisselli* Heydon,

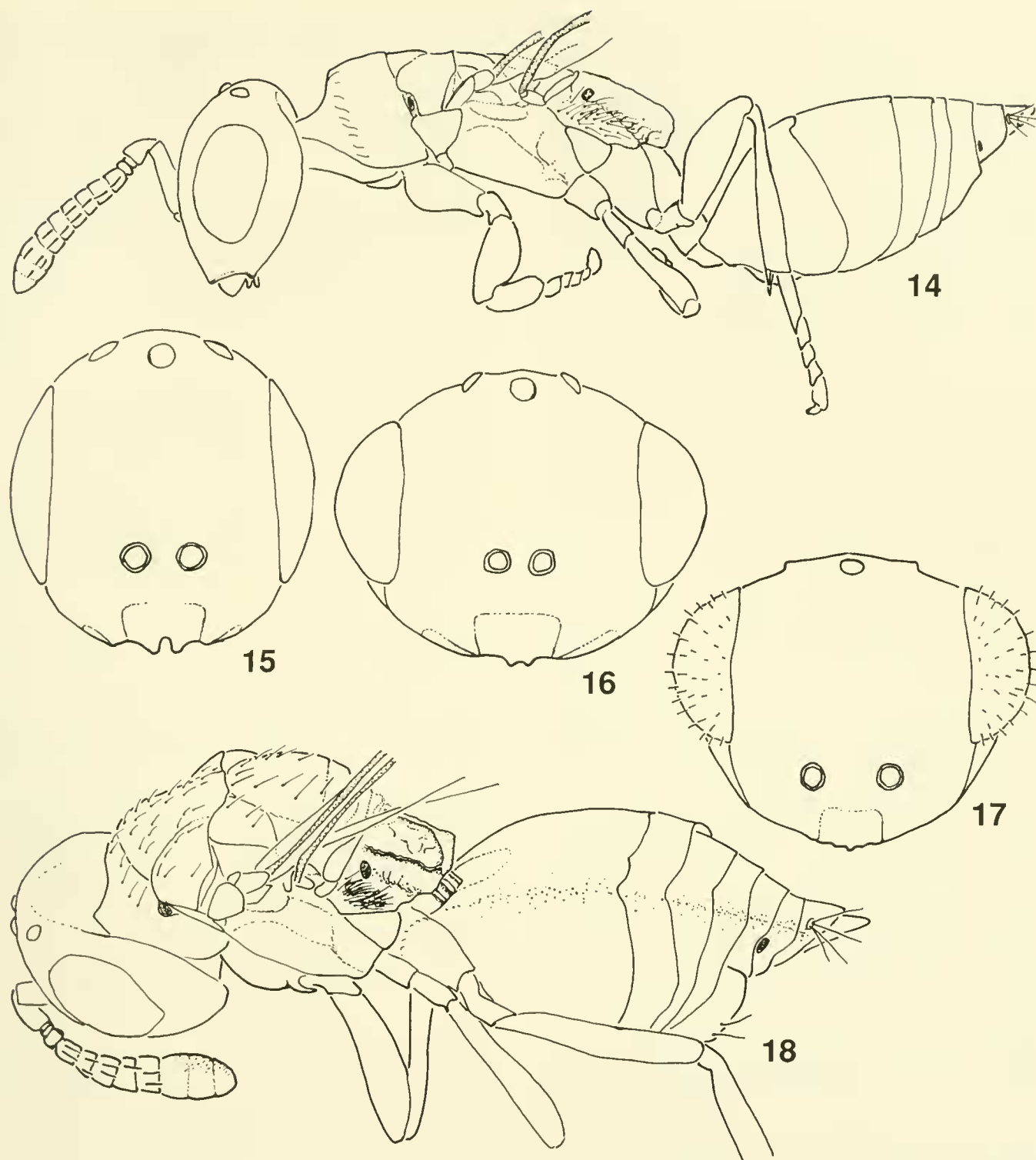
NEW SPECIES

Figs. 14–15

*Color*: Body greenish black except dorsum of mesosoma excluding propodeum dark green. Antenna brown, scape with weak green metallic reflections, base of scape and apex of pedicel paler. Legs with coxae dark green; pretarsi brown; hind femora brown with weak metallic reflections; remainder yellow-brown. Wings clear with veins pale yellow-brown.

*Sculpture*: Clypeus striate; vertex coriaceous laterad and posterior to ocelli; pronotum with posterior  $\frac{1}{3}$ – $\frac{1}{2}$  smooth; scutellum with smooth strip along hind margin, dorsellum smooth; upper epimeron alveolate; propodeum evenly alveolate.

*Structure*: Body length 1.9 mm. Head circular (appearing long-ovate) (Fig. 15); width  $0.96 \times$  height (22:23),  $1.7 \times$  length (22:13); eye height  $1.6 \times$  length (13:8),  $2.9 \times$  malar distance (13.0:4.5), length  $2.0 \times$  temple length (8:4); genal hollow extending almost halfway to eye; torulus located  $\frac{1}{2}$  own diameter above LOcL; ratio of MOD, OOL, POL, LOL as 2.0:4.5:6.0:3.0; occiput deeply concave. Antenna with length of pedicel plus flagellum  $1.0 \times$  head width (23:22); only scape and pedicel together reaching median ocellus; relative lengths of scape, pedicel, annellus, F1–6, club as 9.0:4.0:1.0:1.5:2.0:2.0:2.0:2.0:2.0:6.0; relative widths of F1, F6, club as 2.0:3.0:3.0; MPP sensilla in single sparse row; club with no visible patch of micropilosity. Mesosoma length  $2.3 \times$  width (43.0:18.5), flattened with majority of mesoscutum and scutellum in same plane (Fig. 14); collar rounded, without any trace of teeth anteriorly, humeral angles rounded rectangular; propodeum with a very low median crest, posteriolateral corners of me-



Figs. 14–18. 14–15, *Sphagigaster grisselli*, female. 14, habitus; 15, head (anterior view). 16, *S. schauffi*, female, head (anterior view). 17–18, *Tricyclomischus nearcticus*, female. 17, head (anterior view); 18, habitus.

dian panels rounded, nuchal region smooth, propodeum longer than scutellum. Fore wing length  $2.7 \times$  width (67:25); speculum open posteriorly; relative lengths of submarginal, marginal, postmarginal, stigmal veins as 24:25:11:5; costal cell setose in apical  $\frac{1}{3}$ , more or less bare basally; basal cell bare; basal vein with single seta on right wing, stigma hardly wider than stigmal vein.

Petiole length  $1.8 \times$  width (10.0:5.5), maximum width  $1.2 \times$  minimum width (5.5:4.5); with 2 basal setal pairs. Gaster length  $1.5 \times$  width (33:22); hind margin of T1 weakly sinuous, broadly produced mesally; terminal gastral terga projecting beyond apex of T2.

Allotype, male.—Similar to female except generally paler, head and mesosoma

dark green, vertex and dorsum of mesosoma with yellowish reflections; scape dark green; pretarsi and hind femur nearly concolorous with remainder of legs. Body length 2.0 mm. Antenna with length of pedicel plus flagellum  $1.9 \times$  head width (55.0:29.5); relative lengths of scape, pedicel, annellus, F1–6, club as 10.0:4.0:1.0:7.5:7.0:6.5:6.5:6.0:5.5:11.0; relative widths of F1, F6, club as 3.0:3.0:3.0; funicular segments elongate, pedunculate; MPP sensilla very sparse; setae straight, semierect, on minute papillae giving flagellum a granulate appearance. Pronotal collar with anterior margin lacking any trace of teeth. Petiole length  $2.1 \times$  width (15:7). Gaster length  $1.6 \times$  width (35:22).

**Diagnosis.**—*Sphegigaster grisselli* differs from other Nearctic *Sphegigaster* species (see Heydon and LaBerge 1989) in having the head as high as wide; the scape not nearly reaching the median ocellus; the vertex smooth; the segments of the male flagellum more elongate ( $2 \times$  as long as wide), pedunculate, and granulately sculptured; the dorsum of the mesosoma flattened; a broad smooth strip along the hind margin of the pronotal collar and scutellum; and the upper epimeron alveolate. Other *Sphegigaster* species have the head distinctly wider than high; the scape reaching or nearly reaching the median ocellus; the vertex alveolate; the segments of the male flagellum shorter, not pedunculate, and smooth; the dorsum of the mesosoma arched anterioposteriorly; the pronotal collar almost completely alveolate; and the upper epimeron smooth to coriaceous. *Sphegigaster grisselli* and *S. schauffi* described below are similar to species in *Ploskana* Bouček because of their flattened bodies and bidentate clypeus, but they share four characters with other *Sphegigaster* species that are not found in *Ploskana* species: 1. Distinct genal hollows. 2. Incomplete notauli. 3. Lack of a median carina or plicae on the propodeum. 4. Absence of a pair of sublateral emarginations in the hind margin of T1.

**Etymology.**—It is my pleasure to name

this species in honor of my good friend and colleague Dr. E. E. Grissell.

**Type material.**—The holotype, allotype (both CNC), and 3 female and 12 male paratypes (CNC, UCD) emerged from the pith of *Urtica dioica* stems collected in Ancaster, Ontario (Canada) by J. E. Martin. An additional 13 paratypes were collected as follows (AMNH, CNC, CSU): Canada. Ontario: Ancaster, IV.1963 (reared from Agromyzidae, ex pith of *Urtica dioica* stems), 2 ♀, 3 ♂, 19.XII.1966 (ex *Phytomyza flavicornis* Fallen), 1 ♀, 3 ♂, 21.XII.1966 (ex *Melanagromyza martini* Spencer), 1 ♀. Quebec: Lac Mondor, Ste. Flore, 6.VII.1951, 1 ♂. United States. Wisconsin: Ashland, Dingdong Creek, 3 mi e. Clam Lake, 1.VIII.1978, 1 ♀. Wyoming: 4 mi wnw. Moran P.O., Teton Co., 20.VII.1977, 1 ♂.

**Biology.**—Known host(s) of *Sphegigaster grisselli* include *Phytomyza flavicornis* Fallen and *Melanagromyza martini* Spencer (both Diptera: Agromyzidae). The type series was reared from the stems of *Urtica dioica* L. (Urticaceae). Spencer and Steyskal (1986) list *Melanagromyza urticella* Spencer as a stem borer in *U. dioica* and this fly may be its insect host.

***Sphegigaster schauffi* Heydon,  
NEW SPECIES**

Fig. 16

**Holotype, female.**—*Color:* Body black except for khaki metallic reflections on smooth strip along posterior margin of pronotal collar and lateral lobes of mesoscutum. Antenna brown. Legs with coxae black; remainder brown except knees, apical tip of tibiae, basal tarsi yellow-brown. Wings clear; veins pale brown, stigma brown.

*Sculpture:* Vertex laterad and posterior to ocelli alveolate; clypeus alveolate; pronotal collar with posterior  $\frac{1}{2}$  smooth; scutellum with only narrow smooth strip along hind margin; dorsellum smooth; propodeum uniformly reticulate; upper epimeron smooth.

*Structure:* Body length 1.9 mm. Head

transversely ovate in anterior view (Fig. 16); width  $1.3 \times$  height (26.0:20.5),  $2.2 \times$  length (26:12); eye height  $1.4 \times$  length (12.0:8.5),  $2.0 \times$  malar distance (12:6), length  $2.8 \times$  temple length (8.5:3.0); genal hollow extending  $\frac{1}{3}$  malar distance; torulus located  $1 \times$  own diameter above LOcL; ratio of MOD, OOL, POL, LOL as 2.0:5.0:6.0:2.5; occiput moderately concave. Antenna with length of pedicel plus flagellum  $0.88 \times$  head width (23:26); relative lengths of scape, pedicel, annelli, funiculus, club as 10.0:3.5:1.0:1.5:2.0:2.0:2.0:2.5:6.5; relative widths of F1, F6, club as 2.0:3.0:3.5; each funicular segment wider than preceding, F1–3 quadrate, F4–6 transverse; scape not quite reaching median ocellus; MPP sensilla sparse, 1–3 visible per face. Mesosoma length  $2.3 \times$  width (41:18), dorsally flattened side to side, very weakly arched front to back; pronotal collar with anterior edge rounded and lacking any trace of angular teeth, humeral angles not prominent; frenal sulcus indistinct; propodeum just shorter than scutellum; without median crest; posteriolateral corners of median panels rounded; nuchal region with only a short smooth strip. Fore wing length  $2.3 \times$  width (70:31); speculum open behind; relative lengths of submarginal, marginal, postmarginal, stigmal veins as 28:15:12:7; costal cell with single ventral setal row; basal cell and vein bare dorsally; stigma width  $1.5 \times$  length (3:2). Petiole length  $2.0 \times$  width (9.0:4.5), maximum width  $1.1 \times$  minimum width (4.5:4.0). Gaster length  $2.7 \times$  width (43:16); hind margin of T1 shallowly concave, weakly convex mesally; hypopygium extending  $0.33 \times$  length of gaster (14:43); terminal gastral terga extending well beyond hind edge of T2.

Allotype, male.—Similar to holotype except generally paler; face blue-green, frons yellowish green; smooth portion of pronotal collar, lateral portions of mesoscutum, epimeron dark yellowish green. Antenna with scape and pedicel pale brown, remainder brownish yellow. Leg color pattern similar to females except coxae dark blue-green and

brown parts much paler. Body length 1.8 mm. Antenna with length of pedicel plus flagellum  $0.96 \times$  head width (23.5:24.5); relative lengths of scape, pedicel, F1–6, club as 10.0:3.5:1.0:1.5:2.0:2.0:2.0:2.5:2.0:7.0; relative widths of F1, F6, club as 1.5:2.0:2.5; funicular segments elongate, broadly contiguous (not pedunculate), MPP sensilla sparse, setae reclinate. Petiole length  $2.5 \times$  maximum width (10:4), maximum width  $1.1 \times$  minimum width (4.0:3.5). Gaster length  $1.5 \times$  width (27.0:17.5).

Diagnosis.—*Sphegigaster schauffi* is similar to *S. grisselli* in having a flattened mesosoma and a broad smooth strip along the hind margin of the pronotal collar. It differs from other Nearctic *Sphegigaster* species (see Heydon and LaBerge 1989) in having the body black and the gaster more slender (its length almost three times its width) and T1 very shallowly emarginate. Other Nearctic *Sphegigaster* species are metallic green or blue and have the gaster broader and the hind margin of T1 distinctly emarginate.

Etymology.—It is my pleasure to name this species in honor of my good friend and colleague Dr. M. E. Schauff.

Type material.—The holotype (USNM) was collected “west of mine” at Kemmerer-bottom in Lincoln County, Wyoming (United States) on 12 July 1983 by G. Bohart and E. Coomis. The allotype (USNM) was collected at Kemmerer, Lincoln County, Wyoming on 13 July 1983 by G. Bohart and E. Coomis.

Biology.—Host(s) of *Sphegigaster schauffi* are unknown, but the allotype has a label reading “ex. Art. trident.” [*Artemisia tridentata* Nutt. (Compositae)].

### *Tricyclomischus algonquinus* Heydon,

#### NEW SPECIES

Figs. 17–18

Holotype, female.—*Color*: Head, scape, mesosoma, coxae dark olive green except frons more green; pedicel, flagellum, legs beyond coxae, gaster dark brown; wings with veins brown; membrane with yellowish tint.

*Sculpture:* Clypeus smooth; head, mesosoma coriaceous; scutellum weakly colliculate; frenum coriaceous; dorsellum, propodeum rugose alveolate; prepectus alveolate; T1–3 smooth, remainder coriaceous.

*Structure:* Body length 1.7 mm. Head pentagonal in anterior view (Fig. 17); width  $1.2 \times$  height (26.5:23.0),  $2.1 \times$  length (26.5:12.5); torulus located just below LOcL; eye height  $1.2 \times$  length (12.5:10.0),  $1.6 \times$  malar distance (12.5:8.0), length  $5.0 \times$  temple length (10:2); ratio of MOD, OOL, POL, LOL as 2.0:4.0:8.0:3.5. Antenna with length of pedicel plus flagellum  $0.87 \times$  head width (23.0:26.5); relative lengths of scape, pedicel, annelli, F1–6, club as 13.0:4.0:1.0:1.5:2.0:2.0:2.5:2.5:3.0:8.0; widths of F1, F6, club as 2.0:4.0:4.0; F1 small; F2–5 with MPP sensilla in single row, 2–3 visible per face; F6, club granulately textured, with MPP sensilla less distinct; club hemispherical apically (Fig. 18). Mesosoma length  $1.6 \times$  width (37.5:24.0); dorsellum longer mesally than laterally, anterior edge carinate; propodeum with complete median carina, plicae distinct and meeting carina along anterior margin of nucha, spiracle circular and  $1 \times$  own diameter from anterior margin of propodeum. Fore wing length  $2.1 \times$  width (74:35); relative length of submarginal, marginal, postmarginal, stigmal veins as 27.0:14.0:14.5:9.0; stigma length about  $\frac{1}{2}$  its width; costal cell with 1 complete row of ventral setae, with partial second row on apical  $\frac{1}{3}$ ; basal cell completely setose; basal vein visible; speculum reduced. Petiole transverse, length  $0.38 \times$  width (3:8). Gaster length  $1.4 \times$  width (37:27),  $0.73 \times$  combined length of head and mesosoma (37:47); T1 with hind margin sinuous laterally, straight mesally; hypopygium extending  $0.70 \times$  gastral length (26:37).

Allotype, male.—Similar to female except body length 1.6 mm. Antenna with length of pedicel plus flagellum  $1.2 \times$  head width (28:24); relative lengths of scape, pedicel, annelli, F1–6, club as 12.0:4.0:1.0:2.0:

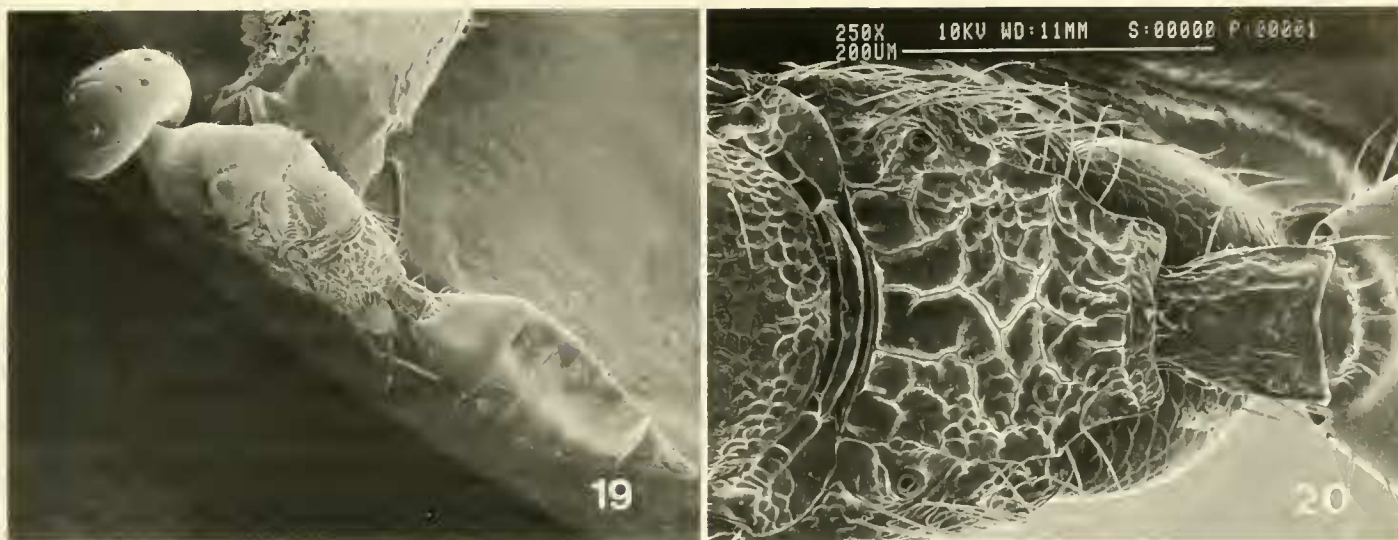
2.5:2.5:2.5:2.5:3.0:9.0; relative widths of F1, F6, club as 2.0:3.0:3.0; scape with shiny boss extending from basal  $\frac{1}{3}$  to apex; funicular segments with MPP sensilla in single row, 2–3 visible per face, setae reclinate (length about equal to funicular segment length). Gaster length  $1.6 \times$  width (35:22).

*Diagnosis.*—Specimens of *Tricyclomischus algonquinus* were compared with a pair of the Palearctic species *T. celticus* Graham, and the following differences were noted: *T. algonquinus* has the F1 of the female antenna smaller than F2, but still quadrate in profile; the female flagellum strongly clavate; the female club blunt apically and strongly sclerotized so it does not collapse in air-dried specimens; and the scutellum generally setose over at least the anterior  $\frac{1}{4}$ – $\frac{1}{3}$ , these scutellar setae not or only slightly longer and thicker than the setae of the mesoscutum and axilla. *Tricyclomischus celticus* has the female F1 much smaller than F2, annelliform in profile; the female flagellum weakly clavate; the female club moderately pointed apically, collapsed in air-dried specimens; and the scutellar setae limited to four lateral setal pairs, these setae distinctly longer and thicker than the setae of the mesoscutum and axilla.

*Etymology.*—The species name refers to the Nearctic distribution of this species.

*Type material.*—The holotype and allotype (both CNC) were collected between 24 and 30 June, 1952 at Churchill, Manitoba (Canada) by J. G. Chillcott. A total of 57 paratypes seen were collected as follows (CNC, UCD): Canada. Manitoba: Chesterfield, 11.VII.1950, 1 ♀; Churchill, 17.VI.1952, 6 ♀, 22 ♂, 20.VI.1952 (on willow catkins), 2 ♀, 4 ♂, 29.VII.1949, 1 ♀, 21.VIII.1952, 2 ♂; Eastern Creek (near Churchill), 10.VII.1952, 1 ♀, 13.VIII.1952, 1 ♀; Farnworth Lake (near Churchill), 26.VI.1952, 1 ♀; Fort Churchill, 3.VI.1952, 2 ♂; Mile 505, Hudson Bay River, 13.VI.1952, 1 ♀, 1 ♂, 13.VI.1952, 2 ♀, 1 ♂, 16.VII.1952, 1 ♀; Warkworth Creek (near Churchill), 21.VI.1952, 3 ♂, 7.VII.1952, 1





Figs. 19–20. 19–20, *Panstenon poaphilum*, female. 19, habitus; 20, propodeum and petiole.

♀. Newfoundland: Portland Creek, VI.1974 (Malaise trap), 1 ♂. Northwest Territories: Yellowknife, 20.V.1953, 1 ♀. United States. Alaska: Keni Peninsula, Sidlak Rd., 28.VI.1984, 1 ♀; Naknek, 8.VII.1952 (on tundra), 1 ♀.

**Biology.**—The host(s) of *Tricyclomischus nearcticus* are unknown. Many specimens from Churchill, Manitoba were collected on willow catkins.

***Panstenon poaphilum* Heydon,**

**NEW SPECIES**

Figs. 19–20

**Holotype, female.**—*Color:* Head, neck weakly metallic green; remainder of mesosoma with bluish tint; petiole, gaster pale brown with weak metallic reflections. Antenna with scape yellow-brown, apical  $\frac{1}{3}$  darker; pedicel and flagellum brown. Legs (including coxae) pale yellow-brown except pretarsi brown. Fore wing with veins pale brown; membrane clear.

*Sculpture:* Head coriaceous except occiput weakly alveolate; mesosoma with neck coriaceous; collar anteriorly and laterally imbricate, posteriomedially alveolate; scutellum alveolate; propodeum alveolate-rugulose. Petiole weakly costulate. Gaster smooth except TIV–VI coriaceous in part.

*Structure:* Body length 2.1 mm. Head width  $1.3 \times$  height (33:26),  $1.7 \times$  length (33:

19); clypeus with anterior margin truncate, as wide as high; eye height  $1.1 \times$  length (16:15),  $2.3 \times$  malar distance (16:7), length  $5.0 \times$  temple length (15:3); toruli located  $\frac{2}{3}$  the distance between clypeus and vertex; ratio of OOL, POL, LOL as 5:10:5. Antenna with combined length of pedicel and flagellum  $1.3 \times$  head width (40:33); relative lengths of scape, pedicel, annelli, F1–6, club as 14:5:2:4:4:4:4:4:9; widths of F1, F6, club as 3:4:5. Mesosoma length  $2.1 \times$  width (55:27); collar with very weak anterior transverse carina (Fig. 19); propodeum with plicae distinct (Fig. 20). Fore wing length  $3.1 \times$  width (105:34); relative lengths of submarginal, marginal, postmarginal, stigmal veins as 36:27:34:8; costal cell with single ventral row of setae; remainder of fore wing setose dorsally except for basal anterior half of basal cell. Petiole terete, length  $1.0 \times$  maximum width (7.5:7.5); with a pair of seta midway down its length that extend perpendicularly (Fig. 20). Gaster fusiform (Fig. 19), length  $2.0 \times$  width (55:27).

Males similar but with antenna more slender, each segment twice as long as wide and petiole distinctly longer than wide.

**Variation.**—The body length of females examined varied from 1.9–2.7 mm. The metallic coloration is more intense in larger specimens. The legs may be more intense yellow-brown. There is also considerable

variation in the amount of rugosity on the propodeum.

**Diagnosis.**—*Panstenon poaphilum* differs from the European species *P. agylla* (Walker) in having the malar distance only  $0.44 \times$  the eye height, the pronotal collar only weakly carinate, the frenal sulcus weakly impressed and in lacking a red band on the gaster. *Panstenon poaphilum* closely resembles *P. oxylyus* (Walker) but has a pair of lateral setae on the petiole and the propodeum with distinct rugae in the region between the plicae.

**Etymology.**—The species name is derived from the Greek words *poa*, meaning grass, and *philia*, meaning love.

**Type material.**—The holotype (UCD) was collected 24 June 1982 on the South Farms of the University of Illinois (near Champaign), Illinois (USA) by the senior author. Thirty-five female and 6 male paratypes were collected as follows (CNC, UCD, USNM); Canada. Alberta: Slave Lake, 17.VIII.1924, 1 ♀. Manitoba: Ridge Mountain National Park, east scarp, 30.VI.1979 (aspen-maple forest), 1 ♂. United States. Georgia: Sapelo Island (McIntosh Co.), 29.IV.1987 (savanna, flight intercept trap), 3 ♂. Illinois: South Farms of the University of Illinois (near Champaign), 25.VI.1982, 1 ♀; Forest Glen State Preserve, 6 mi ne. Georgetown, 26.V.1984, 1 ♀; 1 mi n. Pomona, 5.IX.1982, 1 ♀. Indiana: Richmond, 2 ♀. Minnesota: Olmstead Co., 15.V.1905 (from oat stubble), 1 ♀, 24.V.1905, 1 ♀, 25.V.1905, 1 ♂, 3.VI.1905 (from oat stubble), 2 ♀. Missouri: Columbia, 6.IX.1967, 1 ♀; Williamsville, 20.IV–1.V.1987, 2 ♀, V.1987, 1 ♀, VI.1987, 1 ♀, VII.1987, 2 ♀, VIII.1987, 5 ♀, 10–26.IX.1987, 3 ♀, X.1987, 1 ♀. Virginia: Fairfax Co., near Annandale), 1–12.VII.1988, 1 ♀; 4 mi s. Cuckoo, 25.IV–13.V.1988, 1 ♀; 27.V.1986, 2 ♀, 26.VI–5.VII.1987, 2 ♀, 6–16.VII.1987, 1 ♀, 13–27.VII.1988, 1 ♀; 2 mi w. Dawn, 12.V.1973, 1 ♀; Shenandoah National Park (915 m), 19.IX.1980, 1 ♂.

**Biology.**—The exact host(s) of *P. poa-*

*philum* are unknown, but it has been reared in association with oat stubble.

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